



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/893,487	06/29/2001	Tomomi Yamanobe	32011-173478	6307

7590

01/16/2003

VENABLE

Post Office Box 34385

Washington, DC 20043-9998

EXAMINER

LEWIS, MONICA

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 01/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/893,487

Applicant(s)

YAMANOBE, TOMOMI

Examiner

Monica Lewis

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. This office action is in response to the amendment filed October 29, 2002.

#### *Response to Arguments*

2. Applicant's arguments with respect to claims 1-5 and 7-15 have been considered but are moot in view of the new ground(s) of rejection.

#### *Specification*

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

#### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-5 and 7-15 are rejected under 35 U.S.C. 103(a) as obvious over Cuchiaro et al. (U.S. Patent No. 6,165,802) in view of Yokoyama et al. (Japan Patent No. JP403049229A) and Furuhashi (Japan Patent No. JP402105556A).

In regards to claim 1, Cuchiaro et al. ("Cuchiaro") discloses the following:

a) wiring layer structure connected to a first electrode (124) of a ferroelectric capacitor having first and second electrodes (124 and 120), comprising a main wiring layer (134) and a coating layer (126) on the outer periphery of this main wiring layer (See Figure 1); and

b) a coating layer including a first coating part provided between said main wiring layer and said first electrode (See Figure 1).

In regards to claim 1, Cuchiaro fails to disclose the following:

a) main wiring layer comprises a first material that reacts with a substance to produce a reducing agent, said substance being infiltrated from the outside to this main wiring layer.

However, the limitation of "first material that reacts with a substance to produce a reducing agent, said substance being infiltrated from the outside to this main wiring layer" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

b) a second coating part provided on the top surface of said main wiring layer.

However, Yokoyama et al. ("Yokoyama") discloses a coating part (45) on the top surface of the wiring layer (43) (See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Cuchiaro to

include a coating layer on the top surface of the wiring layer as disclosed in Yokoyama to aid in preventing junction leak failure.

Additionally, since Cuchiaro and Yokoyama are both from the same field of endeavor, the purpose disclosed by Yokoyama would have been recognized in the pertinent art of Cuchiaro.

c) a third coating part provided on side faces of said main wiring layer.

However, Furuhashi discloses a coating part (5) on the sides of the wiring layer (3) (See Figure 3b). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Cuchiaro to include a coating layer on the sides of the wiring layer as disclosed in Furuhashi to aid in improving the reliability of the wiring layer.

Additionally, since Cuchiaro and Furuhashi are both from the same field of endeavor, the purpose disclosed by Furuhashi would have been recognized in the pertinent art of Cuchiaro.

In regards to claim 2, Cuchiaro discloses the following:

a) first material is aluminum (Al) (See Column 5 Lines 45 and 46).

In regards to claim 3, Cuchiaro discloses the following:

a) second material is titanium nitride (TiN) (See Column 5 Lines 22-26).

In regards to claim 4, Cuchiaro discloses the following:

a) second material is titanium (Ti) (See Column 5 Lines 22-26).

In regards to claim 5, Cuchiaro discloses the following:

a) second material is titanium nitride (TiN) and titanium (Ti) (See Column 5 Lines 22-26).

In regards to claim 7, Cuchiaro discloses the following:

a) first, second, and third coating parts are titanium nitride (TiN) films  
(See Column 5 Lines 22-26).

In regards to claim 8, Cuchiaro discloses the following:

a) first and third coating parts are titanium nitride (TiN) films, and said second coating part is a built-up film composed of a titanium (Ti) film and a titanium nitride (TiN) film  
(See Column 5 Lines 22-26).

In regards to claim 9, Cuchiaro discloses the following:

a) first coating part is a titanium nitride (TiN) film, and wherein said second and third coating parts are built-up films composed of a titanium (Ti) film and a titanium nitride (TiN) film (See Column 5 Lines 22-26).

In regards to claim 10, Cuchiaro fails to disclose the following:

a) first coating part is a titanium nitride (TiN) sputtering film, and said second and third coating parts are TiN-CVD films.

However, the limitation of "titanium nitride (TiN) sputtering film, and said second and third coating parts are TiN-CVD films" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also

Art Unit: 2822

*In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 11, Cuchiario fails to disclose the following:

a) first and second coating parts are TiN-sputtering films, and said third coating part is a TiN-CVD film.

However, the limitation of "TiN-sputtering films, and said third coating part is a TiN-CVD film" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether

Art Unit: 2822

claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 12, Cuchiaro fails to disclose the following:

a) first coating part is a TiN-sputtering film, said second coating part is a built-up film composed of a Ti-sputtering film and a TiN-sputtering film, and said third coating part is a TiN-CVD film.

However, the limitation of "TiN-sputtering film, said second coating part is a built-up film composed of a Ti-sputtering film and a TiN-sputtering film, and said third coating part is a TiN-CVD film" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 13, Cuchiario fails to disclose the following:

a) first coating part is a TiN-sputtering film, said second coating part is a built-up film formed from a Ti-sputtering film and a TiN-sputtering film, and said third coating part is a built-up film formed from a Ti-CVD film and a TiN-CVD film.

However, the limitation of "TiN-sputtering film, said second coating part is a built-up film formed from a Ti-sputtering film and a TiN-sputtering film, and said third coating part is a built-up film formed from a Ti-CVD film and a TiN-CVD film" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 14, Cuchiario fails to disclose the following:

a) substance infiltrating from the outside is either water (H<sub>2</sub>O) or hydrogen (H<sub>2</sub>).

However, the limitation of "substance infiltrating from the outside is either water (H<sub>2</sub>O) or hydrogen (H<sub>2</sub>)" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 15, Cuchiaro fails to disclose the following:

a) reducing agent is either hydrogen (H<sub>2</sub>) or hydrogen radical (H\*).

However, the limitation of "reducing agent is either hydrogen (H<sub>2</sub>) or hydrogen radical (H\*)" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product

Art Unit: 2822

of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

### ***Conclusion***

6. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure: a) Lee et al. (U.S. Patent No. 6,448,649) discloses a multilayer wiring structure; b) Yasui (Japanese Patent No. JP410312999A) discloses ferroelectric memory; and c) Yoshida et al. (Japanese Patent No. JP05029255) discloses a semiconductor device.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 703-305-3743.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final

Art Unit: 2822

communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ML

January 8, 2003

  
**AMIR ZARABIAN**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2822**